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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,471	02/17/2004	Rishi Mohindra	PHA23.914A	1404

65913 7590 03/31/2008

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EXAMINER	
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ART UNIT	PAPER NUMBER
2617	

NOTIFICATION DATE	DELIVERY MODE
03/31/2008	ELECTRONIC

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/780,471
Filing Date: February 17, 2004
Appellant(s): MOHINDRA ET AL.

Michael Ure, Reg. No. 33,089
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 02/15/2008 appealing from the Office action mailed 08/23/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5603112	Gabato et al.	2-1997
4028641	Bodtmann et al.	1-1997
6081697	Haartsen	6-2000
6311049	Yoshizawa	10-2001
5901347	Chambers	5-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato (U.S. Patent 5,603,112) in view of Bodtmann (U.S. Patent 4,028,641).

With respect to claims 1, 15, Gabato discloses a prior art (See Fig. 2) which teaches a method of determining received signal strength indicator (RSSI) signal from an in-phase (I) signal component and a quadrature (Q) signal component (See Gabato e.g. I, Q, 201, 203, 205 of Fig. 2) that are (inherently) a low intermediate frequency (IF) signal that represents a received radio frequency signal, first determines an absolute value from in-phase (I) signal component (See Gabato 201 of fig. 2); and second determines an absolute value from quadrature (Q) signal component (See Gabato e.g. 203, of fig. 1); and forming a sum of the absolute values (See Gabato e.g. 205 of fig.1, Co. 1, Lines 23-38) and or

performing a limiting operation to obtain a limited in-phase signal component and a limited quadrature signal component (See Gabato e.g. as defined logarithmically processing I and Q, Co. 1, Lines 21-27). Further, With respect to Fig. 3, Gabato discloses that the determined absolute value in-phase (I) signal component and determined an absolute value of quadrature (Q) signal component compared and added / summed after to output absolute value of (RSSI) (See Gabato e.g. Co. 1, Lines 21-27, Co. 2, Lines 45-59 & fig.3). However, Gabato does not disclose the (or limited) in-phase signal component and the (or limited) quadrature signal component contribute to the sum used to form the RSSI indication in equal proportion. In an analogous field of endeavor, Bodtmann teaches that the (or limited) in-phase signal component and the (or limited) quadrature signal component contribute to the sum in equal proportion (See Bodtmann e.g. Co. 1, lines 54-56). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Bodtmann to Gabato to provide a method or system or configuration for eliminating even order nonlinearities wherein carriers are added which differ in phase from quadrature from the modulating carrier signal by equal and opposite amounts as suggested (See Bodtmann e.g. Co. 1, lines 54-56).

Regarding claims 4, 16, Gabato and Bodtmann disclose everything as discussed above in claim 1. Further, Gabato makes its obvious that an additional ROM is required to calculate the square-root or logarithmically (10 log) processing (See Gabato e.g. Co. 1, Lines 41-42) and / or a function block which calculates f(x) = 20 log (x) to obtain values in dB (See Gabato e.g. Co. 2, Lines 55-58) . Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provided above teaching of Gabato to provide a method and / or an apparatus for measuring the RSSI and logarithmically processing was accomplished by a function block f(x) = 20 log (x) to obtain values in dB in-phase (**I**) and quadrature (**Q**) signal components before determining / after summing first and second absolute values / magnitudes in a less complex calculation (See e.g. Gabato e.g. Co. 1, Line 65- Co. 2, Line 2).

3. Claims 7, 13, 20-21, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato (U.S. Patent 5,603,112) in view of Haartsen (U.S. Patent 6,081,697) further in view of Bodtmann (U.S. Patent 4,028,641).

With respect to claim 7, 13, 20, 25, Gabato discloses a prior art (See Fig. 2) which teaches a method of determining radio device / a received signal strength indicator (RSSI) signal from an in-phase (I) signal component and a quadrature (Q) signal component (See Gabato e.g. I, Q, 201, 203, 205 of Fig. 2) that are inherently formed low intermediate frequency (IF) signal that represents a received radio frequency signal, first determines an absolute value from in-phase (I) signal component (See Gabato e.g. 201 of fig. 2); and second determines an absolute value from quadrature (Q) signal component (See Gabato e.g. 203, of fig. 1); and summing the absolute values (See 205 of fig.1, Co. 1, Lines 23-38). Further, With respect to Fig. 3, Gabato discloses that the determined absolute value in-phase (I) signal component and determined an absolute value of quadrature (Q) signal component compared and added / summed after to output absolute value of (RSSI) (See Gabato e.g. Co. 2, Lines 45-59 & fig.3). However, Gabato did not explicitly teach the radio device comprising: an antenna for receiving a radio frequency signal; a quadrature down converter for producing a low intermediate frequency in-phase signal component and a low intermediate frequency quadrature signal component from radio frequency signal. In an analogous field of endeavor, Haartsen teaches a known conventional radio receiver architecture which shows an antenna (See 205 of Fig. 2) for receiving a radio frequency signal; a quadrature down converter for producing a low intermediate frequency in-phase signal component (See Haartsen e.g. 270, 260, 230, 240, 250 of Fig. 2) and a low intermediate frequency quadrature signal component (See Haartsen e.g. 270, 260, 280, 290, 295 of Fig. 2) from radio frequency signal (See Haartsen e.g. Co. 5, Lines 4-35). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Haartsen to Gabato to provide a more compact single integrating circuit which as many as functions as possible to reduce the cost and reduce the power consumption and increase reliability as suggested by Haartsen (See Haartsen e.g. Co. 1, Lines 21-30). Both, Gabato and Haartsen fail teaching the (or limited) in-phase signal component and the (or limited) quadrature signal component contribute to the sum used to form the RSSI indication in equal proportion. In an analogous field of endeavor, Bodtmann teaches that the (or limited) in-phase signal component and the (or limited) quadrature signal component contribute to the sum in equal proportion (See Bodtmann e.g. Co. 1, lines 54-56). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to

provide above teaching of Bodtmann to Gabato and haartsen to provide a method or system or configuration for eliminating even order nonlinearities wherein carriers are added which differ in phase from quadrature from the modulating carrier signal by equal and opposite amounts as suggested (See Bodtmann e.g. Co. 1, lines 54-56).

Regarding claim 21, it is obvious that a first logarithmic signal former for determining a first logarithmic signal from the in-phase signal (See Gabato e.g. I, Q, 201, 203, 205 of Fig. 2) component and a second logarithmic signal (See Gabato e.g. Co. 2, Lines 55-58) former for determining a second logarithmic signal (See Gabato e.g. Co. 2, Lines 55-58) from the quadrature signal component (See Gabato e.g. I, Q, 201, 203, 205 of Fig. 2), the first absolute signal being the first logarithmic signal and the second absolute signal being the second logarithmic signal (See Gabato e.g. Co. 2, Lines 55-58).

4. Claims 5, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato, Bodtmann further in view of Yoshizawa (U.S. Patent 6,311,049 B1).

Regarding claim 5, Gabato and Bodtmann disclose everything as discussed above in the rejected claims 1, 15. However, Gabato and Bodtmann did not teach received signal strength indicator signal is further determined by low pass filtering. In an analogous field of endeavor, Yoshizawa clearly teaches received signal strength indicator signal is further determined by low pass filtering (See 113-114, RSSI output of Fig. 1). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Yoshizawa to Gabato and Bodtmann provided summed signal is smoothed by a low-pass filter as suggested by Yoshizawa (See Co. 2, Lines 12-13).

Regarding claim 17, it is obvious that logarithmically processing comprises multistage limiting of the in-phase and quadrature signal components, and summing (See Gabato e.g. Co. 1, Lines 21-29, Figs. 1-5) the multistage limited in-phase and quadrature signal components (See Yoshizawa e.g. Co. 1, Line 65, Co. 3, Lines 53-58).

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato, Haartsen , Bodtmann and further in view of Yoshizawa (U.S. Patent 6,311,049 B1).

Regarding claim 22, Gabato, Haartsen, Bodtmann disclose everything as discussed above in rejected claims 7, 13, 20, 25. However, Gabato, Haartsen, Bodtmann do not teach it is obvious that

logarithmically processing comprises respective multistage limiters and respective adders for adding signals produced by the multistage limiters. . In an analogous field of endeavor, Yoshizawa clearly teaches logarithmically processing comprises respective multistage limiters and respective adders for adding signals produced by said multistage limiters (See Yoshizawa e.g. dB, limiter 111, RSSI, adder 113, Co. 1, Line 65 - Co. 2, Line 14, 111, 113, 114, RSSI of Figs. 1, 3). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provided above teaching of Yoshizawa to Gabato, Haartsen, Bodtmann to provide a multistage limiter and an adder for wave-shaping the output signal, thereby compensating for the received signal level to obtain an accurate RSSI output signal as suggested by (See Yoshizawa e.g. Co. 2, Lines 50-51, Co. 3, Lines 61-62) components, and summing (See Gabato e.g. Co. 1, Lines 21-29, Figs. 1-5) the multistage limited in-phase and quadrature signal components (See Yoshizawa e.g. Co. 1, Line 65, Co. 3, Lines 53-58)

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato, Bodtmann and further in view of Chamber (U.S. Patent 5,901,347).

Regarding claim 6, Gabato and Bodtmann disclose everything as discussed above in the rejected claims 1, 15. However, Gabato and Bodtmann do not teach the low intermediate frequency (IF) signal is a zero intermediate frequency (IF) signal. In an analogous field of endeavor, Chamber teaches the low intermediate frequency (IF) signal is a zero intermediate frequency (IF) signal (See e.g. Co. 1, Lines 14-27). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provided above teaching of Chamber to Gabato and Bodtmann to provide a low-pass filters which reject unwanted signal frequencies and can be integrated on-chip with other components of the receiver to reduce the size and cost of the receiver and the radio as suggested by Chamber (See e.g. Co. 1, Lines 25-30).

7. Claims 10, 14, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato, Haartsen Bodtmann and further in view of Yoshizawa (U.S. Patent 6,311,049 B1).

Regarding claims 10, 14, 23, Gabato, Haartsen and Bodtmann disclose everything as discussed above in the rejected claims 7, 13, 20, 25. However, Gabato, Haartsen and Bodtmann do not explicitly

teach received signal strength indicator signal is further determined by low pass filtering. In an analogous field of endeavor, Yoshizawa clearly teaches received signal strength indicator signal is further determined by low pass filtering (See e.g.113-114, RSSI output of Fig. 1). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provided above teaching of Yoshizawa to Gabato, Haartsen and Bodtmann provided summed signal is smoothed by a low-pass filter as suggested by Yoshizawa (See e.g. Co. 2, Lines 12-13).

8. Claims 11, 19, 24, 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato, Haartsen Bodtmann and further in view of Chamber (U.S. Patent 5,901,347).

Regarding claims 11, 19, 24, 26 Gabato, Haartsen and Bodtmann disclose everything as discussed above in claims 7, 13, 20, 25. However, Gabato and Haartsen are silent the low intermediate frequency (IF) signal is a zero intermediate frequency (IF) signal. In an analogous field of endeavor, Chamber teaches the low intermediate frequency (IF) signal is a zero intermediate frequency (IF) signal (See Chamber e.g. Co. 1, Lines 14-27). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provided above teaching of Chamber to Gabato, Haartsen and Bodtmann to provided a low-pass filters which reject unwanted signal frequencies and can be integrated on-chip with other components of the receiver to reduce the size and cost of the receiver and the radio as suggested by (See Chamber e.g. Co. 1, Lines 25-30).

9. Claims 12, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabato, Haartsen Bodtmann and further in view of Yoshizawa (U.S. Patent 6,311,049 B1).

Regarding claims 12, 18, Gabato, Haartsen and Bodtmann disclose everything as discussed above in the rejected claims 7, 13, 20, 25. However, Gabato, Haartsen and Bodtmann are silent the received signal strength indicator signal is further determined by low pass filtering. In an analogous field of endeavor Yoshizawa clearly teaches received signal strength indicator signal is further determined by low pass filtering (See e.g. 113-114, RSSI output of Fig. 1). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provided above teaching of Yoshizawa to Gabato, Haartsen and Bodtmann to provided summed signal is smoothed by a low-pass filter as suggested by (See Yoshizawa e.g. Co. 2, Lines 12-13).

(10) Response to Argument

I. Rejection of Claims 1, 4-7 and 10-26 as Being Inadequately Supported in the Specification

Appellant's arguments, see Page 12, filed 02/15/2008, with respect to claims 1, 4-7 and 10-26 have been fully considered and are persuasive. The rejected under 35 U.S.C. 112 of claims 1, 4-7 and 10-26 has been withdrawn.

II. Rejection of Claims 1, 4, 15 and 16 as Unpatentable Over Gabato in View of Bodtmann

Appellant's main argument is that the reference Gabato does not teach the in-phase signal component and the quadrature signal component contribute to the sum used to form the RSSI indication in equal proportion. And the references Gabato and Bodtmann can not be combined in such a manner to arrive at the present invention. The Examiner respectfully disagrees.

As further review of references, Gabato does indeed teach the in-phase signal component and the quadrature signal component contribute to the sum used to form the RSSI indication in equal proportion (See Gabato e.g. **I** (Component) is fed into a squaring function block 201, and **Q** (Component) is fed into a squaring function block 203. The output of each of the squaring function blocks 201 and 203 is added by an adder 205. The output of the adder is fed into a 10 log (base 10 is assumed unless otherwise noted) function block 207, which outputs RSSI in dB, and a square-root function block 209, which outputs RSSI in absolute terms, Co. 1, Lines 30-38). As the evidence show, both **I** (Component) and **Q** (Component) each has X amount in squaring function which inherently makes both **I** (Component) and **Q** (Component) in equal proportion (**emphases added**) being added or summed to form the RSSI indication. On the other hand, Bodtmann is being used to expressly teach that both **I** (Component) and **Q** (Component) in equal proportion being added or summed (See Co. 1, Lines 54-50). Thus, the combination of Gabato and Bodtmann teaches the claimed limitations as recited in claims 1, 4, 15 and 16.

III. Rejection o1" claims 7, 13, 20, 21, and 25 as unpatentable over Gabato in view of Haartsen further in view of Bodtmann

Appellant's argument is mainly repeated the previous argument as discussed above in rejection over Gabato in View of Bodtmann. Please see the Examiner's response as discussed above in **item II**.

IV. Rejection of claims 10, 12, 14, 18, 22 and 23 as unpatentable over Gabato in view of Haartsen further in view of Bodtmann and further still in view of Yoshizawa

Appellant's argument is mainly repeated the previous argument as discussed above in rejection over Gabato in View of Bodtmann. Please see the Examiner's response as discussed above in **item II**.

V. Rejection of, claims 11, 19, 24 and 26 are unpatentable over Gabato in view of Haartsen further in view of Bodtmann and further still in view of Chamber

Appellant's argument is mainly repeated the previous argument as discussed above in rejection over Gabato in View of Bodtmann. Please see the Examiner's response as discussed above in **item II**.

VI. Rejection of claims 5 and 17 as unpatentable over Gabato in view of Bodtmann further in view of' Yoshizawa

Appellant's argument is mainly repeated the previous argument as discussed above in rejection over Gabato in View of Bodtmann. Please see the Examiner's response as discussed above in **item II**.

VII. Rejection of claim 6 as unpatentable over Gabato in view of Bodtmann further in view of Chamber

Appellant's argument is mainly repeated the previous argument as discussed above in rejection over Gabato in View of Bodtmann. Please see the Examiner's response as discussed above in **item II**.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Kamran Afshar 571-272-7796/

Examiner, Art Unit 2617

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